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ABSTRACT

Various conditions which mediate, exacerbate, or reverse the tendency for heavy television viewing to correlate with lower achievement scores among junior high and high school students were studied to determine which factors had the most direct effect on this correlation. The data for the study were collected between 1974 and 1977 from about 650 sixth through ninth grade students in New Jersey. Exploratory analysis of the data indicates that there are systematic differences in the impact of television viewing upon different subgroups of the student population studied. Heavy television viewing seems to do the most damage to students most likely to be high academic achievers and to students with high academic or occupational aspirations. Other factors correlated with the impact of television on academic achievement include the level of attention paid to television by students during viewing and parental attitudes toward television viewing. In general, heavy television viewing makes a significant contribution to lower achievement scores among students who (1) have higher IQ's, (2) have higher aspirations, (3) seem to pay more attention to what they're watching, and (4) are less likely to engage in some conventional teenage behaviors. A reference list and five data tables accompany the text. (Author/JL)

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MORE THAN A SIMPLE ASSOCIATION:

CONDITIONAL PATTERNS OF TELEVISION AND ACHIEVEMENT

by

Michael Morgan

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ABSTRACT

MORE THAN A SIMPLE ASSOCIATION: CONDITIONAL PATTERNS OF TELEVISION AND ACHIEVEMENT

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An increasing number of studies report small but persistent negative associations between how much adolescents watch television and their scores on standardized achievement tests. These studies reveal remarkably comparable overall findings, despite the fact that they cover a wide range of geographic areas across the entire country and utilize samples of vastly different sizes. Yet, few have provided much information about what factors may enhance or diminish these associations -- i.e., what kinds of students are more and less susceptible, and why; even controls for spuriousness are rare in published reports.

This paper examines a variety of conditions which mediate, exacerbate -- or even reverse -- the tendency for heavy television viewing to go with lower achievement scores, particularly in the area of reading comprehension. Systematic differences do emerge; the implications of TV are not at all uniform across subgroups. The data come from about 650 sixth-through-tenth graders attending a public school in suburban/rural New Jersey. While the sample size does not match those of some of the larger recent statewide assessment programs, the data base offers many relevant controls -- IQ, educational aspirations, parental viewing context, reading habits and preferences, other media habits, involvement in television viewing, among others -- which help provide insight into the dynamics of television's impact on adolescent achievement.

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MORE THAN A SIMPLE ASSOCIATION:

CONDITIONAL PATTERNS OF TELEVISION AND ACHEIVEMENT

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Presented at the Conference of the American Educational Research Association, New York, March 1982

When I was first contacted about presenting a paper at this conference, I looked at it as a good opportunity to carry out something our discussant, Bob Hornik, called for in a recent review of research on television and achievement (1). To quote, he argued that "Specification is the order of the day." After all, in some ways we're a lot further on than we were just a few years ago. When I first started looking at associations between television and achievement, most of the relevant studies were from the 1950's, and controls in these studies were rare. Since then, we've had quite a few huge statewide assessment programs -- Rhode Island, Connecticut, Texas, Pennsylvania, California -- and they've come up with remarkably consistent results: except for the relatively small and bizarre group of non-viewers, those who watch more television score lower on most measures of achievement.

There's really no doubt about this conclusion; it's based on literally thousands of students. The kids who watch more television are likely to be the same kids who get lower scores. The question is whether or not that relationship is independent

of some other powerful determinants of both viewing and scores -- factors like IQ, social class, reading habits, and so on. Perhaps more importantly, even if it doesn't hold for everybody, are there meaningful, systematic subgroup differences? And, if so, who are those more and less susceptible students?

Despite the consistency in the simple associations in all these studies, not much attention had been paid to the question of controls, at least in published reports. The few existing studies that did implement much in the way of controls suggested rather powerfully that when we are talking about television and achievement, we are not talking about any simple linear, invariant, across-the-board patterns. While there are interesting differences between different areas of achievement, the differences within various subgroups -- the conditioning effects on other variables on this association -- turn out to be enormous.

To take one example from my own data: controlling for IQ seems to eliminate most of the simple associations between amount of TV viewing and achievement scores, except for reading comprehension and language usage. But that doesn't mean the associations are the same for students of different IQ's. On the contrary: we found particularly strong negative associations for high IQ students, and in some cases, even found significant positive associations for students with lower IQ's (2,3,4). In these cases, heavy viewing seems to reduce the impact of other factors; the differences that are fairly large among light

viewers are relatively smaller among heavy viewers, and the scores of heavy viewers converge. Simply controlling for everything at once may be useful if one is only interested in main effects; but, clearly, overall controls can obscure the dynamics of important cross-group differences.

This fits perfectly with something we've been finding in our research on television's contributions to viewers' conceptions of social reality, and it's a process we call "mainstreaming" (5). Those who watch more television have more homogeneous and uniform perceptions of the world, while the light viewers in the same groups are widely dispersed.

With all this in mind, I was surprised and pleased when I saw the abstracts for the other papers for this session. By and large, they too had moved from simply documenting the fact that heavier viewers get lower scores, and were taking lots of other things into account -- like non-required reading, the home viewing environment, family rules about TV and reading, even viewing of specific programs and uses and gratifications.

The data base I've been working with is tiny in comparison to these statewide assessment programs. But, it has the advantage of being a three-year study of the same students. Unfortunately, achievement data are available only at one time point, so no longitudinal analysis is possible. But in the course of the three years of the study, a tremendous range of variables were measured, many of which have theoretical relevance to the issue of television and achievement. So, what this dataset lacks in

size, it partly compensates in terms of the richness of the other contextual and behavioral variables which may make meaningful and important differences in the relationship between television viewing and students' achievement.

Briefly, the data I'll highlight are from sixth through ninth graders in New Jersey. They were collected between 1974 and 1977 as part of a larger panel study on television's impact on students' conceptions of social reality. Within any given year, the sample includes about 500 or 600 students; certain key measures, though, are available only for those who took part all three years, which is about 200 students. The achievement data are the national percentile ranks of grade equivalents, based on the California Achievement Tests.

The results I'll present derive primarily from exploratory analyses. But from a "mainstreaming" perspective, I expected that the strongest negative associations should hold for those students who are "otherwise" (i.e., as light viewers) more likely to get higher scores. In other words, I'm saying that interactions between television viewing and other factors on achievement scores are likely to reflect a convergence and a homogenization among heavy viewers, rather than an exacerbation of predispositions toward lower achievement.

If this is true, it means that heavy viewing may do the most "damage" among kids who would most likely be high achievers. For those groups of kids who get lower scores, heavy viewing may have no observable impact.

Overall, I looked at over 300 subgroup comparisons -- achievement in eleven different areas by 30 different controls. In just under half, there were significant subgroup differences even after controlling for IQ, social class, sex, and age. Clearly, a lot of other factors in students' lives mediate, enhance, or diminish the relationship between viewing and achievement. And, more often than not, the between-group differences reflect a convergence among heavy viewers. I'll run through a few of the major patterns.

For one example, students' educational and occupational aspirations are related to their achievement scores, even after controlling for IQ and SES. Those who want to spend more years in school, and who want to work in high-level professions, tend to get higher scores. This is particularly true among light TV viewers -- for kids who don't watch much TV, the achievement scores of those with low and high aspirations are very far apart. But among heavy viewers, aspirations make much less difference. (The average difference between light viewers with low and high educational aspirations is 21.5 points, compared to 8.8 points for heavy viewers; $t=6.43$, $p<.001$. The average difference between light viewers with low and high occupational aspirations is 15.3 points, compared to 5.5 for heavy viewers; $t=4.94$, $p<.001$.) The scores of kids with higher aspirations who are heavy TV viewers are about the same as those of all low aspiring kids. The kids who want more schooling and top level jobs are the ones for whom television has a significant, negative,

independent association with achievement. (See Table 1.)

Another interesting set of findings concerns the extent to which kids devote a great deal of attention to what they're watching, or whether they just have the set on to accompany other activities. Students were given a list of nine activities -- like working on hobbies, talking, eating, and so on -- and asked which ones they usually do while watching TV. It's hard to imagine a more indirect measure of "attention" to TV -- but, the results are rather striking. (See Table 2.)

Among lighter viewers, those who seem to be paying a lot of attention to TV get much higher achievement scores than do those for whom viewing is just part of other activities. Yet, among heavy viewers, there are almost no differences. (The average difference between light viewers who do few and many other activities while watching is 13.7 points, compared to 2.1 for heavy viewers; $t=8.81$, $p<.001$.) Those who pay close attention to TV show significant, negative relationships between amount of viewing and achievement on 8 of the 11 tests, even after controls. This not only shows sharp mainstreaming -- it also suggests that the impact of television will be less among those who are not really paying that much attention to what's on.

The amount of time kids spend on outside activities makes the same kind of differences. Based on activity inventories, I looked at two composite scales. One reflects involvement in the adolescent subculture, a sort of "in-crowd, with-it, social" dimension based on time spent talking on the phone, listening to

records, listening to the radio, dating, and grooming. (Only one factor is extracted; alpha = .65.) Kids who spend a lot of time doing these things tend to get lower scores, regardless of how much television they watch. But kids who spend relatively little time on these activities score higher -- unless they're heavy viewers.

The other scale reflects a more studious, home-oriented, "out-of-it" set of activities -- time spent on homework, chores, religion, art, and music. (Only one factor is extracted; alpha = .48.) Kids who spend a lot of time doing these things get higher scores -- unless they're heavy viewers.

In both of these cases, those students who are most likely to get high achievement scores are the ones for whom television seems to have a negative impact. Heavy viewing reduces the effects of other factors, and those with "otherwise" high scores converge with their low-scoring counterparts. (See Table 3.)

Finally, the parental context of viewing also makes a difference, but not in the same way. The associations between amount of viewing and achievement scores are negative and significant when parents are less involved in their children's viewing. What's interesting about this is that parental involvement can be either positive or negative. (Positive involvement implies an active, critical viewing orientation, where parents encourage the viewing of certain shows and explicitly use TV to help teach their kids about the world. Negative involvement is more restrictive, marked by prohibiting

certain types of content and feeling the need to protect children from the evils of television.) Kids whose parents are relatively "laissez-faire" show stronger associations between heavy viewing and lower scores; either kind of involvement decreases the effect. The same conditioning effect of parental involvement has been found in some of our other research (6). In this case, however, the results do not show mainstreaming. Greater parental involvement goes with higher scores, but lower parental involvement means stronger associations between television and achievement. (See Table 4.)

Also, the more kids argue with their parents about what they watch and how much they watch, the stronger the negative links between amount of viewing and achievement scores. To a much lesser extent, the more independence kids have about their viewing -- the more they choose their own shows, watch whenever they want, and watch alone -- the greater the negative association between viewing and scores. (See Table 5.)

Overall, three achievement areas are the most susceptible to all these mediating patterns: reading comprehension, math concepts and problems, and language usage. Others, such as vocabulary skills, language mechanics, and math computation, show fewer conditional associations.

To sum up: the association between television viewing and achievement scores takes on sharply different forms within different subgroups. In general, heavy viewing makes a significant, independent contribution to lower scores among kids

who (1) have higher IQ's, (2) have higher aspirations, (3) seem to pay more attention to what they're watching, and (4) are less likely to engage in some conventional teenage behaviors. In all these cases (and others I don't have time for), the results show mainstreaming -- heavy viewers from high scoring groups converge with their low-scoring counterparts. The exception is in terms of parental involvement in the viewing situation, which (fortunately) seems to reduce the effects of TV, rather than vice-versa.

In general, there is consistent evidence of mainstreaming here. We've come to expect that television may play different roles for different types of students. These data suggest that the variations are not random, but part of a larger process. True, students from groups who get higher scores seem most influenced by heavy viewing, and that's important. But the overall patterns show a systematic convergence of "otherwise" heterogeneous students. What it means is that television can override other powerful forces. The absorption of these differences, and the reduction in variance which seems to go with heavy viewing, may have more critical consequences than any overall main effects.

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TABLE 1

Partial Correlations between Amount of Television Viewing and Achievement Scores, for Students with Low and High Educational and Occupational Aspirations

	OCCUPATIONAL ASPIRATIONS		EDUCATIONAL ASPIRATIONS	
	Low	High	Low	High
Reading:				
Vocabulary	-.03	.11	-.06	.02
Comprehension	-.05	-.18*	-.10	-.18*
Total	-.04	-.07	-.09	-.12
Math:				
Computation	-.03	-.03	.05	-.06
Concepts & Problems	.00	-.22*	-.05	-.14*
Total	-.03	-.13	.01	-.12
Language:				
Mechanics	-.01	-.19*	-.09	-.09
Usage & Structure	-.13	-.27**	-.13	-.21**
Total	-.06	-.26**	-.13	-.14*
Spelling	-.09	-.09	-.18*	-.00
BATTERY TOTAL	-.09	-.26**	-.13	-.20*

Note: Coefficients are partial correlations, controlling for IQ, Social Class, Sex, and Grade in School

* $p<.05$ **$p<.01$

TABLE 2

Partial Correlations between Amount of Television Viewing and Achievement Scores, for Students who Engage in Few and Many Other Activities while Watching Television

	OTHER ACTIVITIES WHILE VIEWING	
	Few	Many
Reading:		
Vocabulary	-.05	.03
Comprehension	-.28**	-.04
Total	-.20*	-.02
Math:		
Computation	-.19*	.06
Concepts & Problems	-.10	-.12
Total	-.18*	-.03
Language:		
Mechanics	-.25**	-.00
Usage & Structure	-.31**	-.14
Total	-.31**	-.05
Spelling	-.09	-.08
BATTERY TOTAL	-.34***	-.08

Note: Coefficients are partial correlations, controlling for IQ, Social Class, Sex, and Grade in School

* $p<.05$ **$p<.01$ ***$p<.001$

TABLE 3

Partial Correlations between Amount of Television Viewing and Achievement Scores, for Students who Score Low and High on Scales of Various Outside Activities

	CONVENTIONAL "TEENAGE" ACTIVITIES [1]		OTHER ACTIVITIES [2]	
	Low	High	Low	High
Reading:				
Vocabulary	-.01	.03	.10	-.07
Comprehension	-.12*	-.03	.02	-.13*
Total	-.09	-.01	.06	-.13*
Math:				
Computation	-.12*	.04	.03	-.06
Concepts & Problems	-.11*	-.00	-.06	-.16**
Total	-.14*	.03	-.01	-.12*
Language:				
Mechanics	.04	-.03	.04	-.02
Usage & Structure	-.12*	-.05	.02	-.06
Total	-.05	-.04	.00	.03
Spelling	.01	.02	.00	.03
BATTERY TOTAL	-.12*	.02	.03	-.11*

Note: Coefficients are partial correlations, controlling for IQ, Social Class, Sex, and Grade in School

1 Talking on phone, Listening to radio and records, Dating, Grooming

2 Homework, Chores, Religion, Art and Music

* $p<.05$ ** $p<.01$

TABLE 4

Partial Correlations between Amount of Television Viewing and Achievement Scores, for Students Whose Parents are "Positively" and "Negatively" Involved in their Viewing

	POSITIVE INVOLVEMENT		NEGATIVE INVOLVEMENT	
	Low	High	Low	High
Reading:				
Vocabulary	.03	.07	.08	.02
Comprehension	-.14*	.10	-.01	-.08
Total	-.09	.12	.02	-.04
Math:				
Computation	-.06	.12	.05	-.03
Concepts & Problems	-.15*	.07	-.12	-.01
Total	-.10	.07	-.04	-.03
Language:				
Mechanics	-.17*	.09	-.18*	.04
Usage & Structure	-.16*	-.09	-.22*	-.09
Total	-.19*	.05	-.21*	-.01
Spelling	-.13	.06	-.10	-.06
BATTERY TOTAL	-.20*	.04	-.14*	-.07

Note: Coefficients are partial correlations, controlling for IQ, Social Class, Sex, and Grade in School

* p<.05 **p<.01

TABLE 5

Partial Correlations between Amount of Television Viewing and Achievement Scores, for Level of Arguing with Parents about TV, and Independence of Viewing

	ARGUING ABOUT TV		INDEPENDENCE OF VIEWING	
	Low	High	Low	High
Reading:				
Vocabulary	.17*	-.10	.12	-.08
Comprehension	-.01	-.16*	-.12	-.07
Total	.11	-.17*	-.03	-.07
Math:				
Computation	.01	.01	.04	-.10
Concepts & Problems	.00	-.14	-.04	-.14*
Total	.00	-.08	-.01	-.12
Language:				
Mechanics	.02	-.17*	-.06	-.12
Usage & Structure	-.05	-.28**	-.19*	-.19*
Total	-.01	-.23**	-.11	-.18*
Spelling	-.09	-.06	-.14	-.04
BATTERY TOTAL	-.03	-.25**	-.13	-.18*

Note: Coefficients are partial correlations, controlling for IQ, Social Class, Sex, and Grade in School

* $p<.05$ **$p<.01$